## REMARKS/ARGUMENTS

Claims 1-9 are pending. Claims 1 and 8 are independent claims and the remaining claims depend from claims 1 and 8. Claims 1-9 were rejected and, in addition, claims 6 and 7 were objected to. Claims 3, 6, and 7 have been amended in accordance with suggestions made by the Examiner. The drawings were also objected to and figures 1A and 1B have been amended.

Change of Correspondence Address

Applicant previously filed a "Revocation of Power of Attorney with New Power of Attorney and Change of Correspondence Address" form for the above-referenced application. However, the Action was sent to the old correspondence address. Accordingly, Applicant encloses herewith a copy of the previously-filed "Revocation of Power of Attorney with New Power of Attorney and Change of Correspondence Address" form and Applicant requests that the change of correspondence address be entered.

Drawings - Objection.

The drawings were objected to on the grounds that elements shown as blank boxes, particularly elements 10-14 and 10A-14A in figures 1A and 1B, should have descriptive as well as numeric labels. Applicant has amended figures 1A and 1B and Applicant submits that the amended figures overcome the objections.

Claim 3.

The Examiner suggested an amendment to claim 3 and Applicant has amended claim 3 in accordance with the Examiner's suggestion. In particular, the alternative language "or" has been replaced with "and", and a condition has been added to the "accepting" element of the claim.

Claims 6 and 7 - Objection.

Claims 6 and 7 were objected to in the Action. Claim 6 was objected to on the grounds that claim 6 recites "preformed" in line 2 of the claim and the Examiner suggested that Applicant change the word to "performed". Claim 7 was objected to on the grounds that claim 7 recites "wherein said node noticing said failure transmitting a message to all other of said interconnected nodes of said

optical network to abort said results", and the Examiner suggested that Applicant amend the claim to read "wherein *said rejecting results substep further includes* said node noticing said failure transmitting a message ..." (emphasis in original). Applicant has amended the claims in accordance with the Examiner's suggestions and Applicant submits that the amended claims overcome the objections.

Claim 8 - § 102 Rejection.

Claim 8 was rejected under 35 U.S.C. § 102 as being anticipated by Barnsley (U.S. Patent Number 5,488,501). Claim 8 recites:

> *A fiberoptic network having a plurality of interconnected nodes with each node capable of selectively switching optical signals in a first wavelength channel in an input fiber to any one of a plurality of wavelength channels and output fibers, said fiberoptic network comprising*
>
> *a control network having a reserved wavelength channel between the interconnected nodes for carrying signaling and control signals for network restoration and provisioning operations.*

Barnsley teaches an optical packet switching network. The Action cites Barnsley at Figure 1 and column 4, lines 8-17 and 58-67, and column 5, lines 1-3, as teaching "each node capable of selectively switching optical signals in a first wavelength channel in an input fiber to any one of a plurality of wavelength channels and output fibers". Figure 1 illustrates a network node and the citations in columns 4 and 5 describe the operation of the node. Barnsley does teach adding optical packets (*see*, for example, column 4, lines 58-59: "... the node 1 can add data packets onto the network ...") and dropping optical packets (*see*, for example, column 4, lines 26-27: "... a data packet intended for the node 1 is dropped to its receiver 12 ..."). However, unlike claim 8 of the present invention, Barnsley fails to teach or suggest:

> *each node capable of selectively switching optical signals in a first wavelength channel in an input fiber to any one of a plurality of wavelength channels and output fibers*

The Action cites Figure 1 of Barnsley as teaching this element. That figure, however, fails to teach a node capable of "switching optical signals in a first wavelength channel ... to any of a plurality of wavelength channels". In particular, Figure 1 of Barnsley illustrates an add module 10 for adding data packets, a receiver 12 and band-pass filter 13 for receiving dropped signals from a switch 8, an amplifier 15, band-pass filter 14, and optical-to-electrical converter 17 for selecting and providing control signals to the switch 8, and the switch 8 for selectively adding, dropping, or passing optical packets. The switch 8 is described in more detail, for example, at column 4, lines 8-17 and lines 45-57. The node illustrated in Figure 1, however, fails to teach "switching optical signals in a first wavelength channel ... to any of a plurality of wavelength channels" as recited in claim 8 of the present invention.

Barnsley does teach of use of more than one wavelength channel. *See,* for example, column 7, lines 53-67, and column 8, lines 1-14. In particular, Figures 5 and 6 illustrate networks including nodes such as that illustrated in Figure 1. Furthermore, Figure 7 illustrates a cross-connect for use with the networks of Figures 5 and 6. *See,* for example, column 3, lines 44-46, and column 8, lines 2-5 and lines 27-30. However, as can be seen from Figures 5-7 of Barnsley, there is no teaching of "switching optical signals in a first wavelength channel ... to any of a plurality of wavelength channels". In particular, Figures 5 and 6 illustrate different network configurations including nodes 40 and 50 and centered around cross-connects 43 and 55. Figure 7 illustrates a cross-connect which switches channels between paths, but it does not teach switching between wavelength channels.

Therefore, Applicant submits that Barnsley neither teaches nor suggests the invention as recited in claim 8. As described hereinabove, the nodes described in Barnsley add, drop, and pass optical packets, but they fail to teach switching optical signals between wavelength channels as recited in claim 8. Furthermore, the networks and cross-connect also fail to teach switching optical signals between wavelength channels as recited in claim 8. Accordingly, Applicant submits that claim 8 is patentable over the cited references.

Claim 9 - § 103 Rejection.

Claim 9 depends from claim 8. Accordingly, Applicant submits that claim 9 is patentable over the cited references for at least the reasons set forth hereinabove with regard to claim 8.

Claim 1 - § 103 Rejection.

Claim 1 was rejected under 35 U.S.C. § 103 as being unpatentable over Ogura et al. (U.S. Patent Number 5,548,639) in light of Xiong (U.S. Patent Number 6,671,256). In particular, claim 1 recites:

> *In an optical network having a plurality of nodes ... a method of restoring connection between said nodes upon a failure of said network, said method comprising:*
>
> *maintaining at each of said nodes a synchronized database of network connections between said nodes;*
>
> *sending messages to other nodes to initiate restoration operations by a node noticing said failure; and*
>
> *recalculating network connections around said failure by each node from a synchronized database at said node.*

In particular, claim 1 recites "an optical network having a plurality of nodes" and "maintaining at each of said nodes a synchronized database of network connections between said nodes". In other words, the network has a plurality of nodes and each of the nodes includes a synchronized database of network connections between the nodes that make up the network. Furthermore, claim 1 recites "recalculating network connections ... by each node". In other words, because each of the nodes maintains a synchronized database of network connections between all of the nodes, all of the nodes recalculate network connections when initiating restoration operations.

With regard to the "maintaining" element of claim 1, the Action cites the VPI Table (33) of Ogura, column 2, lines 27-60, and column 5, lines 16-17 and 37-46. With regard to the "recalculating" element, the Action cites Ogura at column 6, lines 43-67, column 7, lines 1-67, and column 8, lines 1-44. Unlike the claimed invention, however, the VPI Table (33) cited in Ogura fails to disclose or teach each node maintaining a synchronized database of network connections between the nodes. Similarly, Ogura cannot teach "recalculating network connections ... by each node" because only some of the nodes in Ogura contain a relevant portion of the database, so only a limited number of nodes can be updated, not "each node" as recited in claim 1.

More specifically, Ogura teaches each node maintaining only a limited database of connections. It fails to teach each node maintaining a database of network connections between the nodes making up the network. At column 2, lines 30-33, Ogura states:

> ... *VPI (virtual path identifier) table, that is provided in each node for specifying the cross-connection between incoming transmission paths and outgoing transmission paths* ...

In other words, the VPI table at each node includes a database for only a limited portion of the network ("the cross-connection between incoming ... and outgoing transmission paths" for that node). As a result, each node has a portion of the database of network connections, but they do not contain a "database of network connections between said nodes", as recited in claim 1. Accordingly, as stated in Ogura at column 2, lines 57-60:

> ... *the VPI table has to be modified when restoring communication and that the information for modifying the VPI table has to be transmitted to each of the nodes that are included [in] the alternative path.* (Emphasis added.)

In other words, because each node contains only a portion of the database, only those nodes containing relevant portions (i.e., "in the alternative path") are modified or synchronized when restoring communications. As a result, unlike the claimed invention, Ogura fails to teach or suggest "recalculating network connections ... by each node". Instead, the limited nature of VPI tables taught in Ogura recalculate network connections for only some of nodes.

Similarly, Figures 6, 7A, and 7B of Ogura further illustrate the limited database taught by Ogura. In particular, Ogura teaches the use of VPI tables at each node, but the VPI tables contain cross-connect information for only that node, and the VPI tables fail to include maintaining at each node a synchronized database of network connections between the other nodes of the network as recited in claim 1. Figures 6, 7A, and 7B illustrate the process of updating the VPI tables in the affected nodes with the information regarding new cross-connect information for that node. *See also*, Ogura at column 7, lines 31-67, and column 8, lines 1-67, and column 9, lines 1-6.

Furthermore, Ogura teaches away from the present invention because, as stated at column 2, lines 60-67:

> *As the VPI table includes 4096 items, the transmission of the whole VPI table to one of the nodes included in the alternative path requires transmission of a very large amount of information. The transmission ... requires a considerable amount of time, and the time needed for establishing the alternative path becomes inevitably long.*

In other words, Ogura teaches that the information maintained at each node needs to be reduced, as stated in the Summary of the Invention in Ogura at column 3, lines 11-13, it is stated:

> *... the amount of information necessary for modifying the VPI table ... is substantially reduced.*

As a result, Ogura teaches away from the claimed invention which recites synchronizing the entire database at each node. This distinction is further emphasized in claims 3 and 5 of the present invention, as is discussed hereinbelow.

Finally, the Action admits that Ogura fails to teach at least one element of claim 1. In particular, the Action states that:

> *Ogura et al. do not specifically disclose that the network is an optical network of that the channels are wavelength channels transmitted over optical fiber. However, it is well known in the art that nodes such as disclosed by Ogura et al. may communicate optical signals in wavelength channels over optical fiber in order to efficiently communicate large amounts of data. Xiong et al. in particular teach transmitting optical signals between nodes in a network and switching the signals in the optical domain (column 1, lines 12-37).*
>
> *It would have been obvious to a person of ordinary skill in the art to use the system already disclosed by Ogura et al. in an optical network with optical signal channels as suggested by Xiong et al. in order to increase the speed and bandwidth of communications (compared to in an all-electrical network).*

Although Xiong discloses an optical network, it fails to overcome the other deficiencies described hereinabove with regard to Ogura. Accordingly, assuming that the teachings of Ogura can be applied to an optical network as set forth in Xiong, the combined teachings still fail to overcome the deficiencies set forth hereinabove. Accordingly, for at least the reasons set forth hereinabove, Applicant submits that claim 1 is patentable over the cited references.

Claims 2-7 - § 103 Rejections.

Claims 2-7 depend, directly or indirectly, from independent claim 1. Accordingly, for at least the reasons set forth hereinabove with respect to claim 1, Applicant submits that claims 2-7 are patentable over the cited references.

In addition, claim 3 of the present invention further illustrates the distinctions between the claimed invention and the cited art. In particular, claim 3 recites:

> *... accepting results of said recalculating network connections at all of said interconnected nodes of said optical network ...*

Similarly, claim 5 of the present invention recites:

> *... said node transmitting a message to all other of said interconnected nodes of said optical network to update databases of said interconnected nodes of said optical network with said results ...*

The claimed invention is directed to maintaining at each of the nodes a database of network connections between all of the nodes. Accordingly, when any of the connections is changed, such as when recalculating network connections after a failure, the recalculated network connections are updated in databases in "all of said interconnected nodes" as recited in claim 3 of the present invention and a message is transmitted to "all other of said interconnected nodes of said optical network to update databases ..." as recited in claim 5 of the present invention.

The Action cites Ogura at column 6, lines 42-46 as teaching the subject matter of claim 3 of the present invention. Although the cited portion of Ogura may teach accepting results by establishing an alternative path, it fails to teach doing so at "all of said interconnected nodes of said optical network". In fact, as discussed above with regard to claim 1, Ogura teaches updating only the databases which are directly affected by the change. For example, as stated in Ogura at column 2, lines 57-60:

> *the VPI table has to be modified when restoring communication and that the information for modifying the VPI table has to be transmitted to each of the nodes that are included [in] the alternative path.* (Emphasis added.)

As a result, although Ogura teaches updating some nodes (i.e., those in the alternative path), it fails to teach or suggest updating "all of said interconnected nodes".

With regard to claim 5, the Action cites Ogura at column 7, lines 32-67 and column 8, lines 1-44, as disclosing "that the node noticing the failure (N8) transmits a message (called a "path setup message") to all other of the interconnected nodes to update databases (i.e., the VPI tables) of the interconnected nodes ...". The cited portion of Ogura teaches updating only the nodes in the alternative communication path, not all of the other nodes in the network. Ogura, at column 7, lines 40-67, and column 8, lines 1- 44, describes the "path setup message". In particular, Ogura describes that the path setup message is sent to nodes in the alternative path to effect a change in the network to implement the alternative path. As discussed above, however, Ogura fails to teach or suggest updating all databases in all nodes with the alternative path information.

Accordingly, Applicant submits that the cited references fail to teach or suggest the claimed invention and that claims 2-7 are patentable over the cited references.

Conclusion.

Applicant submits that the application, as amended, is in condition for allowance. If the Examiner has any questions pertaining to this Amendment or to the subject application in general, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

Darren E. Wolf
Registration No. 36,310
412-392-5681